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REMARKS/ARGUMENTS

Claims 1 - 16 are pending in the present application.

Claims 1, 2 and 9 have been amended.

The field of the invention is policy-based management, including provisioning and managing network services by assigning behaviors to the network resources (or network elements NEs). The resources can belong to, or span, separate administrative or technological domains, so that access to those resources can be requested by several different management entities in the same domain or in different domains, for the same or different network services.

The present invention is directed to:

(1) A mechanism to allow dynamic and trusted policy relation establishment between a PEP and a PDP, and the hand-over of the management of part of a PEP (using PEP virtualization) to a different PDP. This mechanism is based on the separation or decoupling of the management of policies from the management of policy-enabled resources (see Figure 2 and the "whereby" clause added to claims 1 and 9). Here, the Resource Policy Layer (RPL) is the policy management entity in charge of implementing the network service across domains. It includes one or many PDPs. The Network Resource Controller (NRC) is the network resource management entity in charge, within its domain, of locating the resources needed to implement a network service on behalf of the RPL. For resources outside its domain, the NRC signals a request to the NRC in the

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appropriate adjacent domain. The NRC also acts as the trusted entity that controls the hand-over of the virtual PEP to a separate PDP. This is a non-centralized management solution since there are several PDPs involved per policy domain.

(2) A virtualization of the PEPs to allow a multi-PDP management paradigm (see Figure 3). A virtual PEP is created dynamically when the NRC requests resources for a new service instance. This virtual PEP then initiates the policy association with the PDP in charge of implementing the network service and only presents to the PDP resources needed for the service instance. Available resources are managed by the main PEP.

(3) A separation of the interfaces on the PEP (main and virtual PEP-NRC). Thus, the main PEP-NRC includes a main PEP and the NRC. The main PEP advertises resource pools to the NRC and the NRC requests that some resources within those pools take on a role that will implement part of the service. This triggers the creation of the virtual PEP. The virtual PEP-PDP includes a virtual PEP and the PDP. The virtual PEP only advertises resources based on their role within the service instance (fine-grain view of resources). The PDP provides the policy decisions to be implemented on those resources

(4) A resource-capability-information descriptor (RCI) used between PEP-NRC, PDP-NRC and PEP-PDP to establish resource or resource-pool capabilities, request resources or allocate resources.

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The Examiner's rejection of claims 1 and 3-7 and 9-10 under 35 U.S.C. 102(e) as being anticipated by Law (2004/0039803) (hereinafter Law) is respectfully traversed.

The rejection of claims 2 and 11-16 under 35 U.S.C. 103(a) as being unpatentable over Law in view of Gibson et al (2002/0085559) (hereinafter Gibson) is respectfully traversed.

The rejection of claim 8 under 35 U.S.C. 103(a) as being unpatentable over Law in view of RFC 3084 COPS Usage for Policy Provisioning (COPS-PR) by Network Working Group, Chan et al (hereinafter Chan) is respectfully traversed.

The prior art in this field (including Law which discloses a hierarchical system (Para 0057)) includes management systems that provide mechanisms to outsource, in a trusted manner, the management of a subset of the resources of a domain to those management entities. Therefore, any given domain has a Policy Enforcement Point (PEP) managed by only one Policy Decision Point (PDP) per policy domain (with some support for failover to a backup PDP) (See element 210 in Fig. 2 of Law and 210', 210" and 210''' in Figs. 2(a), 2(b) and 2(c), respectively. The PEP must be configured for interworking with the respective PDP, before it enters the network; the PEPs do not accept policy rules from different PDPs. Since a domain is equipped with one PDP, that PDP discovers only the network resources in its domain and manages the allocation of those resources between the different services to be implemented.

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The PEPs receive policies from the PDP and enforce them on the Network Elements (NE) they reside on.

Proprietary mechanisms may be used to allow PDPs to negotiate policies with PDPs of other domains in order to provision a service crossing domain boundaries. However, in most cases there is incompatibility in negotiation protocols between PDPs, the mechanisms are complex, require heavy management traffic between the PDPs add to congestion, synchronization of the information is a complex process.

In view of the above, further and favorable reconsideration is respectfully requested.

Respectfully submitted,



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In the event this paper is deemed not timely filed, the applicant hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 26-0090 along with any other additional fees which may be required with respect to this paper.

CERTIFICATE OF TRANSMISSION/MAILING

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